

Claim 1 (Original) A substrate holding mechanism comprising:

 a mounting flange;
 a support member secured to said mounting flange; and
 a retainer ring secured to said mounting flange and arranged around an outer periphery of said support member;
 wherein a substrate to be polished is held on a lower side of said support member surrounded by said retainer ring, and said substrate is pressed against a polishing surface;
 wherein said retainer ring is made of a polyimide compound.

Claim 2 (Original) A substrate holding mechanism comprising:

 a mounting flange;
 a support member secured to said mounting flange; and
 a retainer ring secured to said mounting flange and arranged around an outer periphery of said support member;
 wherein a substrate to be polished is held on a lower side of said support member surrounded by said retainer ring, and said substrate is pressed against a polishing surface;
 wherein said mounting flange is provided with a flow passage contiguous with at least said retainer ring, and a temperature-controlled gas is supplied through said flow passage to cool said mounting flange, said support member and said retainer ring.

Claim 3 (Original) A substrate holding mechanism according to claim 2, wherein said retainer ring is provided with a plurality of through-holes communicating with said flow passage to spray the gas flowing through said flow passage onto the polishing surface of a polishing table.

Claim 4 (Original) A substrate holding mechanism according to claim 3, further comprising switching means for selectively supplying a cooling gas and a retainer ring cleaning liquid to said flow passage.

Claim 5 (Currently Amended) A substrate holding mechanism according to ~~any one of claims 2 to 4~~ claim 2, wherein the temperature-controlled gas supplied through said flow passage is a moistened gas.

Claim 6 (Currently Amended) A substrate holding mechanism according to ~~any one of claims 2 to 4~~ claim 2, wherein a pressurizing chamber is provided between said mounting flange and said support member, and a pressure fluid is supplied to said pressurizing chamber to press said support member, wherein a pressure of the gas supplied through said flow passage is lower than a pressure of the fluid supplied to said pressurizing chamber.

Claim 7 (Currently Amended) A substrate polishing apparatus comprising:
a substrate holding mechanism; and
a polishing table having a polishing surface;
wherein a substrate to be polished that is held by said substrate holding mechanism is pressed against the polishing surface of said polishing table, and said substrate is polished by relative movement between said substrate held by said substrate holding mechanism and the polishing surface of said polishing table;
wherein said substrate holding mechanism is the one that is claimed in ~~any one of claims 1 to 4~~ claim 1.

Claim 8 (Original) A substrate polishing apparatus comprising:
a substrate holding mechanism; and
a polishing table having a polishing surface;
wherein a substrate to be polished that is held by said substrate holding mechanism is pressed against the polishing surface of said polishing table, and said substrate is polished by relative movement between said substrate held by said substrate holding mechanism and the polishing surface of said polishing table;
wherein cooling means is provided for cooling the polishing surface of said polishing table and a substrate holding part of said substrate holding mechanism.

Claim 9 (Original) A substrate polishing apparatus according to claim 8, wherein said cooling means includes a dome having an inlet port and an outlet port, said dome covering the polishing surface of said polishing table and the substrate holding part of said substrate holding mechanism, so that the polishing surface of said polishing table and the substrate holding part of said substrate holding mechanism are cooled with a gas stream induced by locally evacuating an inside of said dome.

Claim 10 (Original) A substrate polishing apparatus according to claim 9, wherein said cooling means includes low-temperature gas supply means arranged so that a low-temperature gas can be supplied into said dome from said low-temperature gas supply means through said inlet port.

Claim 11 (Currently Amended) A substrate polishing apparatus according to claim 9 or 10, wherein said cooling means is arranged so that a neighborhood of a portion of the polishing surface of said polishing table at a side thereof where said polishing table moves relative to said substrate and the substrate holding part of said substrate holding mechanism are placed within a flow path of a gas stream induced by said local evacuation.

Claim 12 (Original) A substrate polishing apparatus according to claim 11, wherein said cooling means includes a partition plate provided in said dome to control a gas stream induced by said local evacuation so that a neighborhood of a portion of the polishing surface of said polishing table at a side thereof where said polishing table moves relative to said substrate and the substrate holding part of said substrate holding mechanism are placed within a flow path of the gas stream induced by said local evacuation.

Claim 13 (Original) A substrate polishing apparatus according to claim 8, wherein said cooling means includes room-temperature gas supply means or low-temperature gas supply means to cool the polishing surface of said polishing table and the substrate holding part of said substrate holding mechanism with a room-temperature gas from said room-temperature gas supply means or a low-temperature gas from said low-temperature gas supply means.

Claim 14 (Original) A substrate polishing apparatus according to claim 13, wherein said room-temperature gas supply means or said low-temperature gas supply means is installed so as to cool a neighborhood of a portion of the polishing surface of said polishing table at a side thereof where said polishing table moves relative to said substrate.

Claim 15 (Original) A substrate polishing apparatus according to claim 8, wherein said cooling means includes low-temperature gas supply means to cool said substrate being polished by supplying a low-temperature gas from said low-temperature gas supply means to a reverse side of said substrate.

Claim 16 (Original) A substrate polishing apparatus according to claim 15, wherein said cooling means includes a fixed flow control valve for ensuring a predetermined flow velocity for the low-temperature gas supplied from said low-temperature gas supply means.

Claim 17 (Original) A substrate polishing apparatus according to claim 16, wherein said fixed flow control valve is an opening-adjustable fixed flow control valve whose valve opening is adjustable.

Claim 18 (Original) A substrate polishing apparatus according to claim 15, further comprising, as means for transferring said substrate after polishing, a vacuum holding mechanism having evacuating means for evacuating the low-temperature gas from a flow passage supplying the low-temperature gas to hold said substrate by sucking the low-temperature gas from said flow passage.

Claim 19 (Original) A substrate polishing apparatus according to claim 18, wherein a check valve is provided in piping where said fixed flow control valve is installed.

Claim 20 (Original) A substrate polishing method wherein a substrate to be polished that is held by a substrate holding mechanism is pressed against a polishing surface of a polishing table, and while a polishing solution is being supplied onto said polishing surface, said substrate is polished by relative movement between said substrate and said polishing surface,

wherein a temperature of said substrate is maintained in a range of from 40°C to 65°C during polishing of said substrate.

Claim 21 (Original) A substrate polishing method wherein a substrate to be polished that is held by a substrate holding mechanism is pressed against a polishing surface of a polishing table, and while a polishing solution is being supplied onto said polishing surface, said substrate is polished by relative movement between said substrate and said polishing surface,

wherein a temperature of the polishing surface of said polishing table and a temperature of said substrate are maintained in a range of from 40°C to 65°C during polishing of said substrate.

Claim 22 (Currently Amended) A substrate polishing method according to claim 20-~~or 21~~, wherein the polishing surface of said polishing table and a substrate holding part of said substrate holding mechanism are covered with a dome having an inlet port and an outlet port, and the polishing surface of said polishing table and the substrate holding part of said substrate holding mechanism are cooled with a gas stream induced by locally evacuating an inside of said dome and with a low-temperature gas supplied from low-temperature gas supply means.

Claim 23 (Original) A substrate polishing method according to claim 22, wherein a neighborhood of a portion of the polishing surface of said polishing table at a side thereof where said polishing table moves relative to said substrate is placed within a flow path of a gas stream induced by said local evacuation to cool said polishing surface and the substrate holding part of said substrate holding mechanism.

Claim 24 (Currently Amended) A substrate polishing method according to claim 20-~~or 21~~, wherein the polishing surface of said polishing table and a substrate holding part of said substrate holding mechanism are cooled with a room-temperature gas from room-temperature gas supply means or a low-temperature gas from low-temperature gas supply means.

Claim 25 (Original) A substrate polishing method according to claim 24, wherein cooling of the polishing surface of said polishing table is effected by cooling a neighborhood of a portion of

the polishing surface of said polishing table at a side thereof where said polishing table moves relative to said substrate.

Claim 26 (Currently Amended) A substrate polishing method according to claim 20-~~or 21~~, wherein a low-temperature gas is supplied to a reverse side of said substrate being polished from low-temperature gas supply means to cool said substrate.

Claim 27 (Currently Amended) A substrate polishing method according to claim 20-~~or 21~~, wherein said substrate to be polished is a substrate having a thin film of wiring material formed over a primary layer, including a recess formed therein, and said substrate is polished to remove the wiring material, exclusive of the wiring material in said recess.

Claim 28 (New) A substrate polishing method according to claim 21, wherein the polishing surface of said polishing table and a substrate holding part of said substrate holding mechanism are covered with a dome having an inlet port and an outlet port, and the polishing surface of said polishing table and the substrate holding part of said substrate holding mechanism are cooled with a gas stream induced by locally evacuating an inside of said dome and with a low-temperature gas supplied from low-temperature gas supply means.

Claim 29 (New) A substrate polishing method according to claim 28, wherein a neighborhood of a portion of the polishing surface of said polishing table at a side thereof where said polishing table moves relative to said substrate is placed within a flow path of a gas stream induced by said local evacuation to cool said polishing surface and the substrate holding part of said substrate holding mechanism.

Claim 30 (New) A substrate polishing method according to claim 21, wherein the polishing surface of said polishing table and a substrate holding part of said substrate holding mechanism are cooled with a room-temperature gas from room-temperature gas supply means or a low-temperature gas from low-temperature gas supply means.

Claim 31 (New) A substrate polishing method according to claim 30, wherein cooling of the polishing surface of said polishing table is effected by cooling a neighborhood of a portion of the polishing surface of said polishing table at a side thereof where said polishing table moves relative to said substrate.

Claim 32 (Currently Amended) A substrate polishing method according to claim 21, wherein a low-temperature gas is supplied to a reverse side of said substrate being polished from low-temperature gas supply means to cool said substrate.

Claim 33 (Currently Amended) A substrate polishing method according to claim 21, wherein said substrate to be polished is a substrate having a thin film of wiring material formed over a primary layer, including a recess formed therein, and said substrate is polished to remove the wiring material, exclusive of the wiring material in said recess.

Claim 34 (New) A substrate polishing apparatus comprising:

 a substrate holding mechanism; and

 a polishing table having a polishing surface;

 wherein a substrate to be polished that is held by said substrate holding mechanism is pressed against the polishing surface of said polishing table, and said substrate is polished by relative movement between said substrate held by said substrate holding mechanism and the polishing surface of said polishing table;

 wherein said substrate holding mechanism is the one that is claimed in claim 2.